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TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.
LVIP:108US

In Re Application Of: Lihl et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/734,566	12/12/2003	Kenneth E. Peterson	24041	3724	1877

Invention: APPARATUS FOR CUTTING SPECIMENS HAVING AN AUTOMATIC PRESETTING APPARATUS

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:
January 20, 2006

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Signature

Dated: April 21, 2006

Robert C. Atkinson
Registration No. 57,584
Simpson & Simpson, PLLC
5555 Main Street
Williamsville, NY 14221-5406
Telephone No. 716-626-1564

RCA/TGM/KRB

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Signature of Person Mailing Correspondence

Robert C. Atkinson

Typed or Printed Name of Person Mailing Correspondence



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent Application No.: 10/734,566

Confirmation No.: 1877

Applicants: LIHL, Reinhard et al.

Customer No.: 24041

Filed: December 12, 2003

For: APPARATUS FOR CUTTING SPECIMENS HAVING
AN AUTOMATIC PRESETTING APPARATUS

TC/Art Unit: 3724

Examiner: PETERSON, Kenneth E.

Docket No.: LVIP:108US

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Robert C. Atkinson
Regis. No. 57,584

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Honorable Sir:

Appellants respectfully appeal the decision of the Examiner finally rejecting Claims 2-7 and 9 as set forth in his Office Action dated October 17, 2005. A Notice of Appeal was timely filed by the Appellants on January 20, 2006.

A **Claims Appendix** follows page 12 of this paper.

An **Evidence Appendix** follows page 13 of this paper.

A **Related Proceedings Appendix** follows page 14 of this paper.

Attorney Docket No. LVIP:108US
U.S. Patent Application No. 10/734,566
Reply to Office Action of October 17, 2005
Date: April 21, 2006

REAL PARTY IN INTEREST

The real party in interest is Leica Mikrosysteme GmbH, Assignee of the above application by assignment recorded in the Patent and Trademark Office at Reel 014803, Frame 0490.

RELATED APPEALS AND INTERFERENCES

Upon information and belief, no appeals or interferences are known to Appellants, which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF CLAIMS

The application originally contained 15 claims.

Claims 1 and 8 have been canceled.

Claims 10-15 have been withdrawn.

Claims 2-7 and 9 stand as finally rejected.

Claims 2-7 and 9 are the subject of this Appeal.

STATUS OF AMENDMENTS

Amendments to Claims 2-7, substituting "microtome or ultramicrotome" for "cutting apparatus" in the preamble, were submitted subsequent to final rejection, but were denied entry by the Examiner.

SUMMARY OF THE CLAIMED INVENTION

The invention relates generally to an apparatus for cutting specimens, in particular a microtome or ultramicrotome which brings a specimen close to a knife of the microtome or ultramicrotome. The apparatus broadly comprises a light barrier arranged such that the relative motion between the knife and the specimen penetrates the light barrier and thereby ascertains a spacing between the knife and the specimen.

Claim 9

Claim 9 recites microtome or ultramicrotome **10** (See generally Page 3, Lines 14-18; Page 4, Lines 1-2) comprising knife **16**, defining knife edge **15**, knife holder **24** for clamping knife **16**, specimen holder **22** for holding specimen **14**, feed device for generating a relative motion between knife **16** and specimen **14** (See Fig 2, Reference Nos. **14**, **16** and **28**; Page 3, Lines 9-10 and 19-20; Page 4, Lines 4-5; Page 8, Lines 17-18), light barrier **30** (See Fig. 2 and 3, Reference No. **30**; Page 7, Lines 18-25) being arranged parallel to knife edge **15** and located between knife **16** and specimen **14** (See Fig. 2 and 3, Reference Nos. **14**, **15**, **16** and **30**; Page 8, Lines 2-4), the arrangement of light barrier **30** is such that the relative motion between knife **16** and specimen **14** penetrates light barrier **30** and thereby ascertains a spacing between knife **16** and specimen **14**. (Fig. 2, Reference Nos. **14**, **16**, **22** and **30**; Page 3, Lines 11-13 and 21-23).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether Claims 2-7 and 9 are non-obvious under 35 USC §103(a) to a person having ordinary skill in the art at the time the invention was made and therefore patentable over European Patent No. EP0544181 (Niesporek)?

ARGUMENT

- 1) Whether Claims 2-7 and 9 are non-obvious under 35 USC §103(a) to a person having ordinary skill in the art at the time the invention was made and therefore patentable over European Patent No. EP0544181 (Niesporek)?

a) Summary of the Rejection:

The Examiner rejected Claims 2-7 and 9 under 35 USC §103(a) as being unpatentable over European Patent No. EP0544181 (Niesporek) More specifically, the Primary Examiner asserted:

Regarding Claim 9, Niesporek discloses a microtome with most of the recited limitations of the claims including a sensing device controlling a feeder device at different speeds (course speed, slicing speed). However, Niesporek determines the position of the blade relative to the sample via a contact sensor rather a light barrier as taught by the instant application. Examiner took Official Notice that it is well known to employ a light barrier to facilitate the optimal positioning between a knife and workpiece. An example of this is the '886 patent to Mohr (figure 6). Thus, it would have been obvious to one of ordinary skill in the art to have modified Niesporek by replacing his contact sensor with a light barrier, as is well known and taught by Mohr, in order to increase reliability (non-contact sensors are less prone to breaking), and also because the two different type of sensors are art-recognized equivalents known for the same purpose. See MPEP 2144.06.

Appellants respectfully request reversal of the Primary Examiner's rejection of Claims 2-7 and 9 for the reasons set forth below.

b) Brief description of the references cited by the Examiner

For purposes of providing background, Appellants briefly discuss the references cited and relied upon by the Examiner.

1) Niesporek

Niesporek discloses a microtome that includes sample holder **51** for sample **22** to be sliced thinly by cutting knife **10**. Sample holder **51**, for performing a cutting movement (arrow **54**) relative to knife holder **12**, can be driven in a first spatial direction (arrows **54** and **56**) by means of first drive **53**, and for performing a course adjustment and a section thickness adjusting movement in a second spatial direction (arrow **54**) perpendicular to the first spatial direction (arrows **54** and **56**) by means of an electrical second drive device **50**. In the vicinity of knife **10**, a mechanical delimiting device **20** is provided with release lug **30** pivotally moveable on pivot axis

28. Release lug 30 is composed of lever arm 32, assigned to knife 10 or sample 22, and lever arm 34 assigned to electrical switch 36, electromagnet 38, and spring element 39. Pivoting of lever arm 32 from position 40 to an intermediate position will stop the coarse movement of knife 10 toward sample 22, i.e., a mechanical contact sensor stops coarse movement of sample 22 toward knife 10 at a predetermined position that corresponds to the moment when lever arm 32 is in the intermediate position.

2) Mohr

Mohr discloses a method of optimizing a machine for cutting sheets of paper 1 stacked on a bench in a cutting machine. Before cutting sheets 1, holdfast beam 8 descends to hold sheets 1 fast while guillotine blade 7 descends and cuts the sheets. After sheets 1 have been cut, blade 7 and beam 8 are lifted with the lower edge of beam 8 following the sharp edge of blade 7. A definite distance between beam 8 and the top of the stack is determined while beam 8 and blade 7 rise after cutting sheets 1. The rise of blade 7 is terminated at the upper end of that distance, which is determined by a pick-up mounted on holdfast beam 8. A light barrier comprising light source 13 and photocell 14, which are the components of the sensor, are positioned below material contact surface 8a (of holdfast beam 8) on opposite ends of holdfast beam 8. The light barrier detects the position of rising blade 7 in relation to holdfast beam 8. Holdfast beam 8 rises and the light barrier rise until light 15 is no longer obstructed, which indicates the distance between holdfast beam 8 and sheets 1. The light barrier determines the positions of holdfast beam 8, blade 7 and sheets 1.

c) Arguments regarding the rejection of Claims 2-7 and 9

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in knowledge generally available to one having ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or the references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on

applicant's disclosure." MPEP § 2142 (citing *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991)) (emphasis added). Appellants respectfully submit that if there is no motivation to combine Niesporek with Mohr; the light barrier recited in Claim 9 is not equivalent to the delimiting device taught by Niesporek.; it is not common knowledge to use a light barrier in place of a contact sensor; Mohr is from a field of art that is non-analogous to that of the instant application; and, the proposed modification of Niesporek's invention changes the invention's principle of operation.

1) There is no motivation to combine Niesporek with Mohr.

Appellants respectfully submit that the Examiner has provided no rational basis for combining Niesporek with Mohr. Elements of separate patents cannot be combined when there is no suggestion of such combination. *See Panduit Corp. v. Dennison Manufacturing Co.*, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987). The recognized law for combining references to support the conclusion that the claimed combination of structural features is directed to obvious subject matter requires that either the references expressly or impliedly teach or suggest the claimed combination, or the Examiner must present a convincing line of reasoning as to why an artisan would have found the claimed invention to have been obvious in light of the teachings of the references. *See e.g., Ex parte Clapp*, 227 USPQ 972 (973) (PTO Br Pat. App. & Int. 1985); *In re Geiger*, 2 USPQ2d 1276 (CA, Fed. Cir. 1987). In this regard, the Examiner asserts in the Final Office Action that Niesporek shows a microtome with most of the recited limitations including a sensing device controlling a feeder device, but the determination of the position of the blade relative to the sample uses a contact sensor rather than a light barrier. The Examiner acknowledged this shortcoming of Niesporek, but took Official Notice that it is well known to employ a light barrier to facilitate optimal positioning between a knife and a work piece. The Examiner supported this Official Notice by asserting that Mohr demonstrated that light barriers are well known. Then, immediately concluded it would be obvious to one of ordinary skill in the art to modify the apparatus and contact sensor taught in Niesporek by replacing his contact sensor with the light barrier taught in Mohr. Importantly, no reasonable rationale or explanation was provided in the Final Office Action how the teachings of the two references, Niesporek and

Mohr, were selected and combined. The Examiner asserts that light barriers are less prone to breaking than contact sensors and that the two sensors are art recognized equivalents, and for those reasons it would have been obvious to modify Niesporek. However, Appellants courteously submit that this line of reasoning appears to be motivated more by impermissible hindsight reconstruction, rather than a suggestion or motivation from Niesporek and Mohr. Appellants' contend that the Examiner has applied impermissible hindsight reconstruction by rendering the invention obvious after having the benefit of a prior reading of Appellants' own disclosure. *See In re McLaughlin*, 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). Consequently, Appellants argue that the no convincing line of reasoning is provided as a basis for combining Niesporek and Mohr independent of Appellants' own disclosure. Thus, the combining of these references appears to be based on hindsight from a prior reading of Appellants' own disclosure and therefore cannot support a *prima facie* case of obviousness. In view of the foregoing, Claim 9, and all claims dependent therefrom, i.e. Claims 2-7, are non-obvious in view of Niesporek.

2) The light barrier recited in Claim 9 is not equivalent to the delimiting device taught by Niesporek

The Examiner cites Mohr as evidence that light barriers can be substituted for contact sensors, however, nothing in Niesporek or Mohr teaches or suggests that light barriers and contact sensors are art recognized equivalents. Niesporek discloses no teaching or suggestion that the delimiting device, or contact sensor, is equivalent to a light barrier. Similarly, Mohr does not suggest or teach that the light barrier used in his invention is equivalent to a contact sensor. Therefore, no cited reference or evidence put forth by the Examiner teaches or suggests the equivalence of light barriers and contact sensors. Outside the assertions from the Examiner in the Final Office Action, there is no evidence offered that shows that light barriers are art recognized equivalents of contact sensors. **Equivalency must be recognized in the prior art** and cannot be based upon the Appellants' own disclosure or the mere fact that the components at issue are functional or mechanical equivalents. *See* MPEP §2144.06; *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958) (emphasis added). Thus, the Examiner has merely asserted that

light barriers are equivalent to contact sensors without sufficient support. Hence, Appellants respectfully assert that the Examiner has fallen victim to the insidious effect of hindsight reconstruction wherein that which only the inventors taught has been used against its teachers. Therefore, the rejection of Claim 9 and all claims dependent therefrom should be reversed.

3) It is not common knowledge to use a light barrier in place of a contact sensor

The Examiner took Official Notice in the Final Office Action that it is common knowledge to replace the contact sensors used by Niesporek for the light barrier used by Mohr, but offers no proof other than assertions that it is common knowledge. Since Niesporek fails to teach a light barrier, as the Examiner has acknowledged, or the exchange of a contact sensor for a light barrier, some other source must be cited for this common knowledge. Mohr, the only other reference cited in the rejection by the Examiner, also fails to teach or suggest that it is common knowledge to exchange a contact sensor for a light sensor. Mohr specifically discloses a light sensor, but there is nothing offered to suggest that it is common knowledge to replace a contact sensor for a light sensor. Deficiencies of cited references cannot be remedied by general conclusions about what is "basic knowledge," or "common sense" to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings. *See In re Zurko*, 258 F. 3d at 1386, 59 USPQ2d at 1697 (Fed. Cir. 2001). Indeed, "to imbue one of ordinary skill in the art with knowledge of the invention ... when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303 (Fed. Cir. 1983). Appellants respectfully assert that no prior art reference or concrete evidence has been provided that conveys or suggests that this information would have been common knowledge. Therefore, there is no teaching, suggestion, or motivation to combine the cited references. Hence, Claim 9 and all claims dependent therefrom are non-obvious in view of the cited references.

4) Mohr is from a field of art that is non-analogous to that of the instant application

Before an examiner can rely on a reference as a basis for an obviousness rejection, the examiner must determine what is “analogous prior art” for the purpose of analyzing the obviousness of the subject matter at issue. The Examiner cited Mohr as a reference that taught or suggested the replacement of a contact sensor with a light barrier in a microtome. The propriety of that ground for rejection is reliant on a finding that Mohr’s disclosure teaches an art analogous to the instant application. To show that a reference is analogous to the rejected application “the reference must either be in the field of the applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned.” *In re Oetiker*, 977 F.2d 1443 (Fed. Cir. 1986).

Appellants courteously submit that Mohr is from a different field than the instant application. Mohr teaches a hydraulic, guillotine, bench cutting machine for cutting sheets of material stacked on a bench (Abstract and Figure 1). That is, Mohr is cutting a plurality of longitudinal sheets orthogonal to the face/surface of the sheets. Specifically, Mohr teaches moving a guillotine blade to cut fixed, stacked sheets of paper, cardboard, or similar material (col. 5, lines 39-41). The sizes of the cuts made by the apparatus taught by Mohr are related to inches and feet. The present invention is related to a microtome that moves a very small specimen with respect to a small knife, to slice off sections of the specimen that are only micrometers thick. Thus, Mohr is not in the same field as the instant application.

Furthermore, the disclosure from Mohr is not reasonably pertinent to the problem with which the instant invention is concerned. The problem that the instant invention seeks to address is to create a reliable measurement system that permitted non-contact, accurate measurement of the spacing between a knife and a specimen to prevent inadvertent contact between the knife and the specimen. In so doing, it seeks to use a light barrier on a microtome to prevent damage to a microtome knife or to a specimen being cut, and to increase the precision of the cutting action of the microtome. In contrast, Mohr does not teach, suggest, or motivate using a light barrier to prevent damage to the cutting mechanism or the sample being cut. Neither does Mohr suggest or

motivate using a light barrier to increase the precision of the cutting action of the blade. The problem Mohr was seeking to address related to optimizing the process of cutting sheets of material in a machine with a blade and a holdfast beam. Specifically, Mohr sought to eliminate inefficient movement of a blade in a paper cutting machine, by tying the upper limit that the blade would travel to the upper limit that the holdfast beam traveled. In conventional paper cutters, the blade rises to a predetermined distance after a downward cutting motion is executed, irrespective of the position of the holdfast beam. Mohr sought to eliminate the extra movement of the blade by tying its movement to a holdfast beam via a light sensor mounted on the beam which determines the height of the paper stack being cut. The upward motion of the blade is synchronized with the holdfast beam and the light sensor is used to position the holdfast beam relative to the paper stack. The height of the blade retreat after cutting a paper stack is dependent on the height the holdfast beam retreats, which in turn is dependent on the height of the paper stack sensed by the sensor at the bottom of the holdfast beam. The fact that the light sensor is used in positioning the holdfast beam starkly highlights the lack of any similarity in the problems being solved by Mohr and the instant invention. The only problem sought to be solved by Mohr was the elimination of inefficient movement of the blade in the take away after the cutting motion was finished. Mohr does not teach or suggest preventing damage to the cutting mechanism or the sample being cut. Neither does Mohr offer motivation to use a light barrier to increase the precision of the cutting action in his invention. Thus, Mohr and the instant invention are solving problems that are unrelated, and Mohr is not reasonably pertinent to the problem sought to be solved by the instant invention.

Since Mohr is not from the same field as the instant invention and because Mohr is not reasonably pertinent to the particular problem sought to be solved by Appellants' invention, there is no indication that Mohr and the instant invention are from recognized analogous arts. For those reasons, Mohr does not support a rejection of the instant application based on obviousness. As a *prima facie* case of obviousness has not been set forth, it generally follows that Claim 9 is patentable over Niesporek and Claims 2-7, dependent from Claim 9, enjoy the same distinction from the cited prior art.

5) The proposed modification of Niesporek's invention changes the invention's principle of operation

The Examiner asserted that it would have been obvious to one of ordinary skill in the art to have modified Niesporek by replacing his contact sensor with a light barrier. The Examiner's proposed modification eliminates the contact sensor utilized in Niesporek in exchange for the light sensor utilized in Mohr. However, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious. *See In re Ratti*, 270 F.2d 810, 813 (CCPA 1959); MPEP §2143.01. A primary principle of operation of Niesporek requires the sensor to be in contact with the specimen to determine the stopping point of the course movement. By eliminating the contact sensor from the Niesporak invention, Examiner's modification has not only changed the principle of operation of this reference, it has completely stripped the basic principle upon which it operates. Substantial reconstruction of a primary reference in this manner cannot create a sufficient basis to render claims *prima facie* obvious. *See In re Ratti*, 270 F.2d 810. Contact between the specimen and the contact sensor is the principle of operation of the Niesporek invention, and since removing this feature from Niesporek would require a change in the basic principle under which Niesporek operates, the modification cannot be used to establish a *prima facie* case of obviousness.

Accordingly, the modification of Niesporek suggested by the Examiner changes the principle of operation of Niesporek and thus cannot establish a *prima facie* case of obviousness. Therefore, Claim 9 is patentable over Niesporek. Claims 2-7, which are dependent from Claim 9, are also patentable over Niesporek. In view of the foregoing, Appellants request that the Board reverse of the rejection of claims 2-7 and 9 as unpatentable over Niesporek.

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Reply to Office Action of October 17, 2005
Date: April 21, 2006

CONCLUSION

For the reasons set forth above, Appellants respectfully submit that Claims 2-7 and 9 are non-obvious under 35 U.S.C. §103(a) to a person having ordinary skill in the art at the time the invention was made and therefore patentable over U.S. Patent No. 5,535,654 (Niesporek). Accordingly, Appellants pray that this Honorable Board will reverse the Primary Examiner's rejection of Claims 2-7 and 9.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. Atkinson', with a long horizontal flourish extending to the right.

Robert C. Atkinson
Registration No. 57,584
CUSTOMER NO. 24041
Simpson & Simpson, PLLC
5555 Main Street
Williamsville, NY 14221-5406
Telephone No. 716-626-1564

Dated: April 21, 2006
RCA/TGM
Attachment

CLAIMS APPENDIX

Reprinted herebelow are the claims involved in this appeal:

2. The cutting apparatus as defined in Claim 9, wherein the light barrier is arranged substantially at the height of the knife blade and at a defined spacing between the knife and the specimen.
3. The cutting apparatus as defined in Claim 9, wherein the light barrier is arranged in stationary fashion with respect to the knife or to the specimen.
4. The cutting apparatus as defined in Claim 9, wherein the light barrier comprises a transmitter of electromagnetic radiation, in particular a laser or an LED, and a receiver of electromagnetic radiation.
5. The cutting apparatus as defined in Claim 4, wherein the transmitter and the receiver are mechanically coupled to the knife holder or to the specimen holder.
6. The cutting apparatus as defined in Claim 5, wherein the transmitter and the receiver are mounted in stationary fashion, in a housing wall of the cutting apparatus.
7. The cutting apparatus as defined in Claim 9, wherein an alternating drive system for moving the specimen at different speeds is further provided in the cutting apparatus.
9. A microtome or ultramicrotome comprising: a knife, defining a knife edge, a knife holder for clamping the knife, a specimen holder for holding a specimen, a feed device for generating a relative motion between the knife and the specimen, a light barrier being arranged parallel to the knife edge and located between the knife and the specimen, the arrangement of the light barrier is such that the relative motion between the knife and the specimen penetrates the light barrier and thereby ascertains a spacing between the knife and the specimen.

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EVIDENCE APPENDIX

No additional evidence is being submitted with this appeal.

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RELATED PROCEEDINGS APPENDIX

Upon information and belief, no appeals or interferences are known to Appellants, which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.